



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1459
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,441	05/10/2005	Yoshinori Tanaka	052483	4713
35834 7590 01/12/2009 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036				
EXAMINER				
WINKLER, MELISSA A				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
01/12/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,441

Applicant(s)

TANAKA ET AL.

Examiner

MELISSA WINKLER

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-16 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-16 and 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/92)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

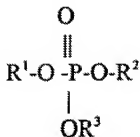
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 7 – 10, 13 – 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al.

Regarding Claims 4 and 23. Singh et al. teach a composition for producing polyurethane foam (Page 4, Line 13 - Page 5, Line 4; Page 11, Line 3 - 20). The composition used to prepare the foam may contain a polyol (Page 5, Lines 1 – 3), a catalyst (Page 5, Line 8), and a foaming stabilizer (Page 5, Lines 7 – 8). The composition also contains a hydrofluorocarbon foaming/blowing agent, such as HFC-245fa (1,1,3,3 – pentafluoropropane) (Page 4, Lines 13 – 30; Page 6, Lines 15 – 16 and 20 - 21).

The composition further contains a phosphate compound of the formula:



wherein R¹ to R³ may denote alkyl groups, preferably C₁ – C₁₂ alkyl groups (Page 11, Lines 3 – 20). While Singh et al. do not expressly indicate that the alkyl chain is straight

or branched, Singh et al. also indicate R^1 to R^3 may denote cycloalkyl groups (Page 11, Lines 13 – 14). Hence, the R^1 to R^3 groups designated as “alkyl” and not as “cycloalkyl” necessarily must be straight-chained or branched alkyl groups.

In Example 1 of the Singh et al. disclosure teaches a “polyol side” composition is prepared from a polyol, a catalyst, HFC-245fa (also known as 1,1,3,3 – pentafluoropropane), surfactants/foam stabilizers, and a phosphate compound. The polyol side composition does not contain isocyanate, as the “isocyanate side” composition comprising isocyanate is blended with the “polyol side” following formation of the “polyol side” composition (Page 16, Lines 15 - Page 19, Line 3; Table 1). The phosphate compound used in Example 1 is tri(beta-chloropropyl)phosphate (TCPP). However, Example 1 provides teaching that phosphate compounds of the above formula - which encompasses both TCPP and tributyl phosphate – can be prepared in a polyol side/premix composition free from isocyanate.

Singh et al. does not expressly teach the phosphate compound is tri-isobutyl phosphate. However, Buszard et al. also teach a polyurethane foam to which phosphorous-containing flame retardants, such as tri-isobutyl phosphate, is added (Column 3, Lines 35 – 39). It is submitted that, though Buszard et al. are silent regarding the acid content of tri-isobutyl phosphate, the instant claim teaches sets forth tri-isobutyl phosphate has a total acid content of 650 mgKOH or less. Singh et al. and Buszard et al. are analogous art as they are from the same field of endeavor, namely polyurethane foams with improved flame resistance. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use tri-isobutyl phosphate as the phosphate compound in the invention of Singh et al. The motivation would have been that tri-isobutyl phosphate provides advantages over, for example, tri-n-butyl phosphate such as a slightly lower density and acid content.

Regarding Claim 7. Singh et al. teach the composition of Claim 4 wherein a mixture of HFC-245fa and other blowing/foaming agents may be included. Hydrofluorocarbons, alkanes, and alkenes are all cited as suitable supplemental blowing agents (Page 6, Line 15 – Page 7, Line 9).

Regarding Claim 8. Singh et al. teach the composition of Claim 7 wherein the supplemental blowing/foaming agent used with HFC-245fa may be n-pentane, isopentane, or cyclopentane (Page 7, Lines 5 – 8).

Regarding Claim 9. Singh et al. teach the composition of Claim 4 also contains water (Page 4, Lines 13 – 21).

Regarding Claim 10. Singh et al. teach a method for producing a polyurethane foam in which the composition of Claim 4 is mixed with polyisocyanate to form a polyurethane foam (Page 4, Line 13 – Page 5, Line 5).

Regarding Claim 13. Singh et al. teach the method of Claim 10 wherein a mixture of HFC-245fa and other blowing/foaming agents may be used. Hydrofluorocarbons, alkanes, and alkenes are all cited as suitable supplemental blowing agents (Page 6, Line 15 – Page 7, Line 9).

Regarding Claim 14. Singh et al. teach the method of Claim 13 wherein the supplemental blowing/foaming agent used with HFC-245fa may be n-pentane, isopentane, or cyclopentane (Page 7, Lines 5 – 8).

Regarding Claim 15. Singh et al. teach the method of Claim 10 wherein the composition used to prepare the foam also contains water (Page 4, Lines 13 – 21).

Claims 5, 6, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al., as applied to Claim 4 above, and further in view of US 5,977,196 to Wicks.

Regarding Claim 5. Singh et al. teach the composition of Claim 4 but do not expressly teach the premix composition contains a supplemental vapor pressure reducing agent. However, Wicks also teaches a composition containing both a hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12). The vapor pressure depressant used is a diether or hydroxyketone (Column 1, Lines 61 – 63). Singh et al. and Wicks are analogous art as they are from the same field of endeavor, namely compositions containing hydrofluorocarbon blowing agents and vapor pressure depressants. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a diether or hydroxyketone as a supplemental vapor pressure depressant in the composition taught by Singh et al. The motivation would have been that the vapor pressure depressants taught by Wicks are a cost-effective strategy for lowering vapor pressure to a desired level and are compatible with hydrofluorocarbon blowing agents (Wicks, Column 2, Lines 47 - 52).

Regarding Claim 6. Singh et al. teach the composition of Claim 5 but do not expressly teach one of the claimed supplemental vapor pressure reducing agents to be used in the premix composition. However, Wicks also teaches a composition containing both a hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant such as dimethoxymethane (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12 and 14 – 17). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use dimethoxymethane as a supplemental vapor pressure depressant in the composition taught by Singh et al. The motivation would have been that dimethoxymethane as a vapor pressure depressant provides advantages such as its excellent dissolving power.

Regarding Claim 19. Singh et al. teach the composition of Claim 5 but do not expressly teach a supplemental vapor pressure reducing agent is added in the claimed amount of 0.1 to 100 parts by weight per 100 parts by weight of the phosphate compound. However, Wicks also teaches a composition containing both hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant such as dimethoxymethane (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12 and 14 – 17). In Example 1, the composition formed contains approximately 77.5 grams of dimethoxymethane (as dimethoxymethane comprises 25 weight% of the 310 gram sealant composition) and 208 grams of hydrofluorocarbon inflator/blowing agent (1,1,1,2-tetrafluoroethane) (Column 2, Line 58 – Column 3, Line 13). At the time of invention, it would have been obvious to a person of ordinary skill in the art to add dimethoxymethane in the amount relative to the hydrofluorocarbon blowing agent taught by Wicks to the composition taught by Singh et al. The motivation would have been that adding dimethoxymethane in the amount relative to the hydrofluorocarbon blowing agent taught by Singh et al. would reduce the vapor pressure of the composition to the desired level.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al., as applied to Claims 4 and 10 above, and further in view of US 5,977,196 to Wicks.

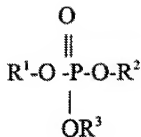
Regarding Claim 11. Singh et al. teach the method of Claim 10 but do not expressly teach a supplemental vapor pressure reducing agent is used. However, Wicks also teaches a composition containing both a hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12). The vapor pressure depressant used is a diether or hydroxyketone (Column 1,

Lines 61 – 63). Singh et al. and Wicks are analogous art as they are from the same field of endeavor, namely compositions containing hydrofluorocarbon blowing agents and vapor pressure depressants. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a diether or hydroxyketone as a supplemental vapor pressure depressant in the composition taught by Singh et al. The motivation would have been that the vapor pressure depressants taught by Wicks are a cost-effective strategy for lowering vapor pressure to a desired level and are compatible with hydrofluorocarbon blowing agents (Wicks, Column 2, Lines 47 - 52).

Regarding Claim 12. Singh et al. teach the method of Claim 11 but do not expressly teach one of the claimed supplemental vapor pressure reducing agents is used. However, Wicks also teaches a composition containing both a hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant such as dimethoxymethane (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12 and 14 – 17). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use dimethoxymethane as a supplemental vapor pressure depressant in the composition taught by Singh et al. The motivation would have been that dimethoxymethane as a vapor pressure depressant provides advantages such as its excellent dissolving power.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al.

Regarding Claim 16. Singh et al. teach a composition containing HFC-245fa (also known as 1,1,3,3 – pentafluoropropane) (Page 6, Lines 15 – 16 and 20 – 21). The composition further contains a phosphate compound of the formula:



wherein R¹ to R³ may denote alkyl groups, preferably C₁ – C₁₂ alkyl groups (Page 11, Lines 3 – 20). While Singh et al. do not expressly indicate that the alkyl chain is straight or branched, Singh et al. also indicate R¹ to R³ may denote cycloalkyl groups (Page 11, Lines 13 – 14). Hence, the R¹ to R³ groups designated as “alkyl” and not as “cycloalkyl” necessarily must be straight-chained or branched alkyl groups.

In Example 1 of the Singh et al. disclosure teaches a “polyol side” composition is prepared from a polyol, a catalyst, HFC-245fa (also known as 1,1,3,3 – pentafluoropropane), surfactants/foam stabilizers, and a phosphate compound. The polyol side composition does not contain isocyanate, as the “isocyanate side” composition comprising isocyanate is blended with the “polyol side” following formation of the “polyol side” composition (Page 16, Lines 15 - Page 19, Line 3; Table 1). The phosphate compound used in Example 1 is tri(beta-chloropropyl)phosphate (TCPP). However, Example 1 provides teaching that phosphate compounds of the above formula - which encompasses both TCPP and tributyl phosphate – can be prepared in a polyol side/premix composition free from isocyanate.

Singh et al. does not expressly teach the phosphate compound is tri-isobutyl phosphate. However, Buszard et al. also teach a polyurethane foam to which phosphorous-containing flame retardants, such as tri-isobutyl phosphate, is added (Column 3, Lines 35 – 39). It is submitted that, though Buszard et al. are silent regarding the acid content of tri-isobutyl phosphate, the instant claim teaches sets forth

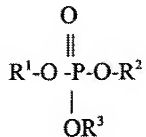
tri-isobutyl phosphate has a total acid content of 650 mgKOH or less. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use tri-isobutyl phosphate as the phosphate compound in the invention of Singh et al. The motivation would have been that tri-isobutyl phosphate provides advantages over, for example, tri-n-butyl phosphate such as a slightly lower density and acid content.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al., as applied to Claim 16 above, and further in view of US 5,977,196 to Wicks.

Regarding Claims 20 and 21. Singh et al. teach the composition of Claim 16 but do not teach the composition contains a supplemental vapor pressure reducing agent. However, Wicks also teaches a composition containing both a hydrofluorocarbon inflator/blowing agent and a vapor pressure depressant (Column 1, Lines 58 – 61 and Column 2, Lines 11 – 12). The vapor pressure depressant used may be a diether, such as dimethoxymethane, or hydroxyketone (Column 1, Lines 61 – 63 and Column 2, Lines 20 - 21). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a diether or hydroxyketone as a supplemental vapor pressure depressant in the composition taught by Singh et al. The motivation would have been that the vapor pressure depressants taught by Wicks are a cost-effective strategy for lowering vapor pressure to a desired level and are compatible with hydrofluorocarbon blowing agents (Wicks, Column 2, Lines 47 - 52).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/05204 to Singh et al. in view of US 7,423,069 to Buszard et al.

Regarding Claim 22. Singh et al. teach a method of making a composition comprising HFC-245fa (also known as 1,1,3,3 – pentafluoropropane) (Page 6, Lines 15 – 16 and 20 –21). The composition further contains a phosphate compound of the formula:



wherein R¹ to R³ may denote alkyl groups, preferably C₁ – C₁₂ alkyl groups (Page 11, Lines 3 – 20). While Singh et al. do not expressly indicate that the alkyl chain is straight or branched, Singh et al. also indicate R¹ to R³ may denote cycloalkyl groups (Page 11, Lines 13 – 14). Hence, the R¹ to R³ groups designated as “alkyl” and not as “cycloalkyl” necessarily must be straight-chained or branched alkyl groups.

In Example 1 of the Singh et al. disclosure teaches a “polyol side” composition is prepared by mixing a polyol, a catalyst, HFC-245fa (also known as 1,1,3,3 – pentafluoropropane), surfactants/foam stabilizers, and a phosphate compound. The polyol side composition does not contain isocyanate, as the “isocyanate side” composition comprising isocyanate is blended with the “polyol side” following formation of the “polyol side” composition (Page 16, Lines 15 – Page 19, Line 3; Table 1). The phosphate compound used in Example 1 is tri(beta-chloropropyl)phosphate (TCPP). However, Example 1 provides teaching that phosphate compounds of the above formula - which encompasses both TCPP and tributyl phosphate – can be prepared in a polyol side/premix composition free from isocyanate.

Singh et al. does not expressly teach the phosphate compound is tri-isobutyl phosphate. However, Buszard et al. also teach a polyurethane foam to which phosphorous-containing flame retardants, such as tri-isobutyl phosphate, is added (Column 3, Lines 35 – 39). It is submitted that, though Buszard et al. are silent regarding the acid content of tri-isobutyl phosphate, the instant claim teaches sets forth tri-isobutyl phosphate has a total acid content of 650 mgKOH or less. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use tri-isobutyl phosphate as the phosphate compound in the invention of Singh et al. The motivation would have been that tri-isobutyl phosphate provides advantages over, for example, tri-n-butyl phosphate such as a slightly lower density and acid content.

Singh et al. do not expressly indicate the above method has the effect of lowering the vapor pressure of 1,1,3,3-pentafluoropropane. Consequently, the Office recognizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredient(s) and process limitation(s). Therefore, the claimed effects and physical properties, i.e. reduction of the vapor pressure of 1,1,3,3-pentafluoropropane, would implicitly be achieved by carrying out the process taught by Singh et al. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients and process steps.

Response to Arguments

Applicant's arguments with respect to Claim 4 - 16 and 19 - 23 have been considered but are moot in view of the new ground(s) of rejection.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA WINKLER whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

MW
December 31, 2008